



ELSEVIER



www.elsevier.com/locate/inext

## CASE REPORT

# Isolated medial uni-condylar hoffa fracture following traumatic knee dislocation

A. Karim\*, N. Rossiter

*Orthopaedic and Trauma Unit, North Hampshire Hospital, Basingstoke, UK*

Accepted 6 June 2005

## Introduction

Condylar fractures of the distal femur are rare and most commonly occur in the sagittal plane.<sup>3</sup> “Hoffa” fractures, first identified by Hoffa,<sup>2</sup> describe an intra-articular lateral condylar or bicondylar fracture that occurs in the coronal plane of the distal femur. The displaced fragments involve the articular surface, mandating open reduction and anatomical internal fixation for good long-term results.<sup>4</sup> Lateral or bicondylar Hoffa fractures are well described. This suggests that the physiological valgus anatomy of the knee, preferentially distributes the transmitted force through the lateral condyle at the time of impact.

We present a case of an isolated unicondylar medial Hoffa type fracture in a young man. We have been unable to find reports of medial Hoffa fractures, and although the fracture line was not exclusively in the coronal plane, it ran obliquely antero-medially to postero-medially toward, but not into the notch, in a Hoffa type injury pattern.

## Case report

A 40-year-old man travelling at approximately 50 MPH was thrown off his motorcycle when he was struck on the right side by a motor vehicle at a junction. He sustained an open fracture of his right tibia and an injury to his right knee. When the ambulance crew arrived, he was able to weight bear sufficiently to remove his protective leathers before being taken to hospital. His only past medical history was of reconstruction nailing to his right femur for a subcapital neck of femur fracture associated with a closed right transverse diaphyseal femur fracture 1 year ago following a similar motorcycle accident. Examination revealed a tense haemarthrosis of the right knee in addition to the (Gustillo and Anderson grade IIIA—graded at the time of surgery) open tibial fracture. Plain radiographs of his knee revealed a displaced unicondylar fracture of the posterior medial condyle in a coronal plane (Fig. 1). Examination under anaesthesia confirmed an unstable knee with laxity in the anterior cruciate, posterior cruciate and medial side; suggestive of a traumatic knee dislocation. The knee was approached through a medial incision and washed out to reveal a normal medial meniscus and tibial plateau. The large medial condylar fragment was reduced, restoring the joint surface, and secured with two postero-medial to antero-lateral lag

\* Corresponding author. Tel.: +44 7958643589; fax: +44 1305266415.

E-mail address: mail@amerkarim.com (A. Karim).



**Figure 1** (a and b) Initial trauma radiographs demonstrating unicondylar Hoffa fracture with fracture line extending through the coronal plane of the medial femoral condyle.



**Figure 2** (a and b) Post-operative radiographs demonstrating fixation of the medial Hoffa type fracture fragment and restoration of the articular surface using two cancellous lag screws.

screws (Fig. 2). The open tibial fracture was debrided and managed with a reamed tibial nail.

## Discussion

The Hoffa fracture is a high energy intra-articular fracture of the distal femur that most commonly occurs in young adults<sup>5</sup> and is synonymous to the capitellum fracture in the elbow. The fracture occurs when the knee is flexion. At the time of impact, direct force is transmitted through the posterior half of the femoral condyle(s), lateral followed by medial,<sup>3</sup> from the energised ascending tibial plateau. Tense haemarthrosis and pain is a presenting feature, however the diagnosis is best made radiologically. Displaced condylar fragments can be seen on lateral radiographs, however undisplaced fractures in the coronal plane can easily be missed,<sup>1</sup> and in the presence of normal X-rays, Computer Tomography may be required to make the diagnosis. The intra-articular component of the Hoffa fracture mandates anatomical reduction and fixation. On occasion the screws need to be inserted through the articular cartilage to achieve

sufficient lag fixation. In these instances the screws must be countersunk and buried to prevent damage to the opposing articular cartilage. Post-operatively patients are immobilised in a locked hinge brace and mobilised touch weight bearing for 6 weeks initially. A gradual increase in weight bearing status and range of motion is then permitted, subject to satisfactory radiological and clinical assessment.

## References

1. Allman KH, Althoefer C, Wildanger G, Gufler H, Uhl M, Seif El Nasr M, et al. Hoffa fracture—a radiologic diagnostic approach. *J Belg Radiol* 1996;79:201–2.
2. Hoffa A. *Lehrbuch der Frakturen und Luxationen*, 4th ed., Stuttgart: Ferdinand Enke-Verlag, 1904. p. 453.
3. Lewis SL, Pozo JL, Muirhead-Allwood WFG. Coronal fractures of the lateral femoral condyle. *J Bone Joint Surg (Br)* 1989; 71:118–20.
4. Neer CS, Ashby Grantham S, Shelton ML. Supracondylar fracture of the adult femur—a study on one hundred and ten cases. *J Bone Joint Surg (Am)* 1967;49(4):591–613.
5. Ostermann PAW, Neumann K, Ekkernkamp A, Muhr G. Long-term results of unicondylar fractures of the femur. *J Orthop Trauma* 1994;8(2):142–6.